Invited Lecture II

Health Care Utilizing Rich Natural Resources in Gunma Prefecture, Joshu: Hot Springs and Mountains

Shigeru SAITO
Department of Anesthesiology, Gunma University Graduate School of Medicine

Japan is the most rapidly aging country in the world, which has large population of high age citizens. Given that many middle-aged to elderly people enjoy a quiet environment and moderate exercise, tours of highlands and non-challenging highland trekking have become increasingly popular in Japan. In this volcano islands-country, most of the highland resorts have very comfortable hot springs having been utilized for health care from ancient era. The development of transportation technologies has provided tourists easy access to high-altitudes, e.g., by automobile, train, airplane, helicopter, or ropeway. Such social environment further increased high age visitors in highland and hot spring resorts.

Walking and trekking at moderate altitudes are reported to be beneficial for health, since it is a non-challenging aerobic exercise. Physical warming and relaxation experienced during hot spring bathing are considered to enforce such beneficial effects of highland trekking. It is known patients with systemic hypertension who moved to locations at middle altitude (1,500‒2,500 m) showed a reduction in blood pressure. Exercise at high altitudes is also effective to prevent diabetes and/or hyper-lipidemia. The older trekkers in highlands presented better performance than comparable individuals in the general population. It is therefore possible that older trekkers who enjoy exercise in mountainous areas are physically and biologically younger than their chronological age.

However, since the incidence of health problems, such as diabetes and hypertension, generally increases among elderly, older people have to be particularly cautious when preparing for trekking activity. According to data released by the Japanese National Police Agency, the number of accidents in highlands has increased markedly over the past ten years. More than 75% of the trekkers involved in these incidents were older than 40 years, and some experienced a stroke or myocardial infarction while trekking at altitude. Hypobaric hypoxia at high altitudes automatically induces low SpO\textsubscript{2} in human regardless its age. Overloaded by the well-known age-dependent reduction of PaO\textsubscript{2}, SpO\textsubscript{2} values were found to decrease as age increased at high altitudes. Elderly trekkers therefore need to be aware of this increased risk of hypoxemia and related disorders when trekking at high altitude.

The physical stress involved in trekking may have a greater impact in this population, possibly because of the age-related decline in the functional reserve of their organs. It also to be noted that rescuing in remote highlands is rather difficult and time-consuming, often impossible, compared to such action in cosmopolitan area. Trekkers at high age should be advised to take appropriate precautions and perform preliminary exercises before starting their treks.

References